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Meeting Minutes Transmittal/Approval
Unit Managers' Meeting
100 Area Remedial Action and Waste Disposal Unit/Source Operable Unit
3350 George Washington Way, Richland, Washington
February 2000

APPROVAL:



Date 3/20/00

Glenn Goldberg/Chris Smith, 100 Area Unit Managers, RL (H0-12)

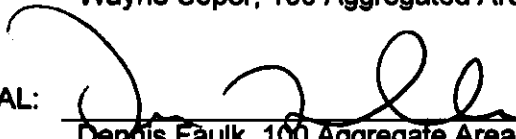
APPROVAL:



Date 3-29-00

Wayne Soper, 100 Aggregated Area Unit Manager, Ecology (B5-18)

APPROVAL:



Date 3-21-00

Dennis Faulk, 100 Aggregate Area Unit Manager, EPA (B5-01)

APPROVAL:



Date 3/21/00

Rick Bond, 100-N Area Unit Manager, Ecology (H0-18)

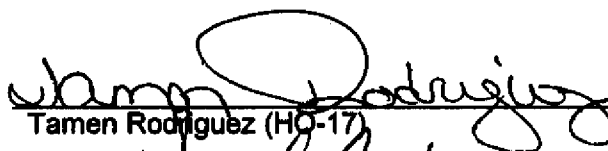
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Meeting minutes are attached. Minutes are comprised of the following:

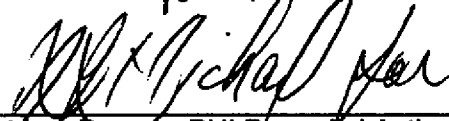
Attachment 1	--	Agenda
Attachment 2	--	Attendance Record
Attachment 3	--	100 Area UMM Minutes - January 2000
Attachment 4	--	Status of CVPs to be Approved in FY00
Attachment 5	--	Appendix A Summary of 116-DR-7 Verification Soil Sampling and Analytical Results
Attachment 6	--	Backfill Concurrence Checklist
Attachment 7	--	Listed Waste - F003 (Methanol)

Prepared by:


Tamen Rodriguez (HO-17)

Date 3/29/00

Concurrence by:


Vern Dronen, BHI Remedial Action and Waste Disposal Project Manager
(HO-17)

Date 3/29/00

[illegible]

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Remedial Action and Waste Disposal Unit Manager's Meeting
 Official Attendance Record
 February 17, 2000

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PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Thomas Kisenwether	GROUP 4	TASK LEAD	531-0673
Chris Smith	DOE	GROUP 4 PROJECT MANAGER	372-1544
JON YERXA	DOE	ORL	376-9628
John April	BHI	RAND DESIGN & ASSESS	2-9632
Glenn Goldberg	DOE	P.M.	36-9552
Arlene Tortoso	DOE	GW PM	373-9631
Dennis Fawcett	EPA	EPA	6-8631
Mark Sturges	ERC	RA Engr.	551-0679
LYLE IVEY	ERC	CVP SITE LEAD	372-9680
Stacey Callison	ERC	" " "	372-9590
M. Buckmaster	ERC	Eng	521-2089
Rick Bond	Ecy	100 N	736-3037
Rick Donald	BHI	Task Lead	372-9565
Garrett Day	BHI	GW Task lead	372-9052
Frank Corbis	BHI	Project Engineer	531-0625

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UNIT MANAGERS MEETING AGENDA

3350 George Washington Way, Room 1B45

February 17, 1999

1:00 – 4:00 p.m. 100 Area 1B45**General**

- Burial Grounds FFS/PP Status
- 100 Area SAP/RDR status
- National Remedy Review Board Comments
- Cleanup Verification Packages
 - Status of CVPs "in process"
 - Schedule for Regulator review of CVPs for rest of FY00
 - Agreement on use of new version of RESRAD
- "White paper" on Risk Assessment
- MTCA values for Arsenic and Lead in old Orchard Areas (e.g., at H and F Reactor Areas)
- "Marginal Contamination areas" - Lookup Values for 2018

100 H, F and K, Group 4

- Updated 100-F Potential to Emit Calcs for Pipe Cutting, and Request for Meeting with DOH
- Review of 100-H Potential to Emit Calcs for Pipe Cutting
- Arsenic Strategy
- 116-H-1 Disposal Trench Significant Plume to the South (include as part of H1 or separate from H1)
- General Up Date on Work Progress at H and F

100N

- 100-NR-1 TSD Remedial Design/Action
 - Procurement Status
 - RDR/RAWP and SAP Status
 - Readiness Review

100-B/C and D

- Review of Potential to Emit Calcs for Pipe Cutting
- Status on Radiological Downposting at 100-B/C Group 1 Sites

Groundwater

**MEETING MINUTES
REMEDIAL ACTION AND WASTE DISPOSAL
UNIT MANAGERS' MEETING – 100 AREA
February 17, 1999**

Attendees: See Attachment #2

Agenda: See Attachment #1

1:00 – 4:00 p.m. 100 Area Room 1B45

General

- **5-Year Review Process** - EPA discussed this review process, in which they will evaluate the implementation of Hanford remediation activities conducted thus far. The review will make the determination whether remedial actions are being protective of human health and the environment. The document, which is to be written by the EPA Region 10 Hanford Office, will not re-evaluate remedial action decisions. All four National Priority List (NPL) sites (1100, 200, 300 and 100 Areas) will be evaluated, and the initial product will be four separate documents under one cover (including Ecology and EPA sites). The review will include all Operable Units, including those that do not currently have a Remedial Investigation/Feasibility Study completed for the unit. The review will include all sites remediated for future unrestricted land use that can be removed from the NPL. DOE and Ecology will review the document and concur on the document. EPA personnel involved in the 5 Year Review process may also need DOE support in conducting site walkdowns of all sites during March-April timeframe and in providing any needed site data. The document is being prepared at this time, and the draft is expected to be available in April. The final document will be completed in the summer.
- **Outfall structures** – DOE (John Sands) introduced Loren Oakes of Energy Northwest (EN). EN currently has a consulting company studying outfall remediation at the Hanford Generating Plant (HGP). Loren is currently working on the remediation of the HGP outfall located within the 100 N Operable Unit. Loren discussed EN's initial idea and approach to dealing with the outfall. The primary focus will be to stabilize potential contamination; the plan proposed by EN calls for installing a concrete plug in the outfall pipe that discharges to the river. The outlet to the river is secured from any potential effluent discharge. No excavation/demolition would be conducted during plug installation. Loren asked if there was any other information or input on this activity that he could integrate into EN's HGP outfall remediation plan. ERC (John April) took the action to provide Loren with preliminary designs on outfall structures.
- **Burial Grounds Focused Feasibility Study/Project Plan (FFS/PP) Status** – ERC (John April) stated that internal ERC review in response to regulator comments is almost complete. ERC and EPA agreed to hold an informal meeting to review document modifications made so far. The formal response will then be submitted formally to EPA. EPA (Dennis Faulk) stated that, as a result of the National Remedy Review Board comments, the guidance to achieve the Remedial Action Objectives in the FFS must be revised to change the preliminary remediation goal of 15 mrem/yr above background to the National Contingency Plan risk range of 10^{-4} to 10^{-6} . However, the standard of 15 mrem/yr above background for radionuclides is used to develop soil cleanup standards for direct exposure because of multiple contaminants at Hanford waste sites.

- **Cleanup Verification Packages (CVPs)**

- Status of CVPs "in process"- ERC (Mark Sturges) provided a handout (Attachment 4) containing the CVP document review status and schedule for this calendar year. EPA (Dennis Faulk) requested that document changes in response to EPA comments be pointed out. ERC noted that EPA had seven Rev. 0 CVP documents in their hands for signature and the draft 116-C-2ABC CVP for EPA review and comment. EPA indicated that they were ready to sign off on all the CVPs (Rev. 0 and draft) as soon as ERC demonstrated to EPA that all their comments were incorporated. The handout also included a table displaying isotope lookup values for use in 2000 that would represent a 15 millirem per year dose in 2018. As discussed in the January Unit Manager Meeting, attendees are investigating whether allowing contamination levels to decay below cleanup levels by 2018 would be an approach in balance with active soil remediation. As all parties review the information, the alternative "natural decay" method will be discussed further.
 - ERC provided the regulators with a handout consisting of the Waste Site Reclassification (WIDS) form and a 12 page document entitled "Closeout Information for the 116-DR-7 Inkwell Crib" (Attachment 5). This short document is designed to serve as a CVP document for sites such as 116-DR-7, which has proven contamination-free by sampling and comparison to a similar sites. ERC explained that with such sites, an abbreviated closeout document would suffice in place of a full-blown CVP document. ERC proposed that the abbreviated Closeout Information Document be used in appropriate cases. The regulators took the action to review the document as a possible approved way to document clean site closeout.
 - Agreement on use of new version of RESRAD – not discussed.
- "White paper" on Risk Assessment – EPA (Dennis Faulk) stated that review of this paper is in progress.
 - "Marginal Contamination areas" – Lookup Values for 2018 – The information provided above in Attachment 3 (Status of CVPs "in process") was further discussed. The regulators discussed the areas where the natural decay remediation alternative could be used. EPA (Dennis Faulk) made a request for information on the amount of materials removed and correlating budget spent on remediation of areas that would have decayed to acceptable levels between now and 2018. This information will be used to evaluate the use of natural decay where possible in the future. ERC (Jon Fancher) took the action to provide EPA with this information from the 116-C-1 site information as a representative case. EPA will review the information and discuss the natural decay approach further at the March Unit Manager Meeting.
 - DOE (Glenn Goldberg) asked ERC to verify what portion of analytical site closeout data has been entered in the Hanford Environmental Information System (HEIS). Some DOE personnel have not been able to locate closeout data. ERC (Jon Fancher) verified that all of the closeout data, specifically the verification sample data, has been entered in the HEIS system. ERC asked DOE to provide feedback on HEIS use and offered needed support if the data did not appear to be in the system or accessible.

100 H, F and K, Group 4

- **General Update on Work Progress at H and F** - ERC (Tom Kiserwether) provided the status of Group 4 remediation activities. The 100 H pipeline removal is approximately 70% complete. ERC is encountering, identifying and remediating plumes as waste sites are nearing completion in the 100 H Operable Unit. The 100 F air monitors will be operational in about a week, commencing the required four weeks of pre-remediation air sampling. EPA (Dennis Faulk) reiterated the desire to minimize dust suppression water use. ERC agreed to support water usage minimization as much as possible. ERC stated that it is concerned with the dust potential when remediating the 116-F-1 Ash Pit.
- **Review of Updated 100 F Potential to Emit (PTE) Calculations for Pipe Cutting, and Request for Meeting with DOH** - ERC stated that the 100 F PTE calculations did not include torch cutting activities. ERC will revise the PTE calculations to properly include the torch cutting. ERC requested EPA's approval for ERC to meet with DOH and obtain approval for the revised calculations. EPA provided approval and requested to be present at the meeting. ERC stated that there may also be 100 D PTE calculation revisions as a result of recent scale sampling, and if possible ERC will try to combine all of the revised calculations in to the single meeting with DOH and EPA. The scale in the 100 H Area pipelines was also sampled. The results from this sampling will be compared to the scale data used in the 100-H Area PTE calculations.
- **MTCA values for Arsenic and Lead in old Orchard Areas (e.g., at H and F Reactor Areas)** - ERC (Mark Buckmaster) reviewed the arsenic's historical use in the 1930s and 1940s as a pesticide during the pre-Hanford agricultural period. ERC will revise the Remedial Design Report/Remedial Action Work Plan to change the arsenic default value from the Hanford background value to the higher state background value. EPA stated that this would be acceptable solution. However, EPA still requires analytical data such as variance samples to provide a sound technical basis for the higher arsenic levels. ERC stated that arsenic samples would be included in the 100-F plan detailed work plan.
- **ERC identified that a significant plume in the south 116-H-1 Disposal Trench has been identified and is working with DOE to obtain funding to complete remediation of the 116-H-1 south end plume.**

100N

- **100-NR-1 TSD Remedial Design/Action**
 - **Procurement Status** -ERC (Rick Donahoe) stated that six bids had been received for the project. ERC requested clarification on some of the bid information. The bidders are in the process of providing answers to the ERC clarification questions. In addition, fiscal year 2000 (FY 2000) funding had to be adjusted to compensate for a \$750,000 shortfall. ERC requested that bidders provide a Best Revised Offer (BRO) for the project, reallocating FY 2000 funds to future years by moving forward some of the mobilization costs. The BRO proposals are due on 2/23/00 from the bidders to ERC. On the current schedule, ERC plans to award the bid on 3/20/00.
 - **RDR/RAWP and SAP Status** - ERC will transmit the SAP document to DOE on 2/17/00. ERC should complete RDR/RAWP revisions and provide that document to DOE in about a month. EPA asked if transuranic waste would pose any concern during

remediation activities. ERC replied that the transuranic waste would not be a problem due to the method of excavation and the waste designation that would be used.

- **Readiness Review** – The Project Readiness Review is proceeding on schedule. ERC is finalizing the formal letter, from DOE to Ecology, requesting the deletion of some pipeline scope. The pipeline is located next to the 116-N-2 site (known as the "Golfball" site), and is being deleted due to its location in a highly radiologically contaminated area at great depth. The Auditable Safety Analysis for the 116-N-3 Crib should receive approval signatures shortly.

100-B/C and D

- **BC pipelines** – EPA (Dennis Faulk) requested that ERC provide cost and schedule information for the completion of the B/C pipelines removal. EPA would use the information to evaluate commencing the work this fiscal year versus deferring the work to a later year. ERC (Alvin Langstaff) took the action to provide the requested information. The Tri-Party Agreement milestone to complete the B/C pipeline remediation currently has a completion date of 2/28/01. The milestone end date may be changed.
- **Review of Potential to Emit (PTE) Calculations for Pipe Cutting** – As previously discussed (Review of Updated 100 F Potential to Emit Calculations for Pipe Cutting), ERC stated that there may also be 100 D PTE calculation revisions. Recent scale samples were obtained from the near-reactor pipe. Scale samples were taken because there was increased radioactivity detected on the worker lapel monitors. The 100 D PTE calculations may need to incorporate recent data from scale samples in near-reactor pipe if the results are above the constituent concentrations used on the original PTE calculations. If possible, ERC will try to include the discussion of these revised calculations in the 100 F PTE calculation revision meeting with DOH and EPA.
- **Status on Radiological Downposting at 100-B/C Group 1 Sites** - ERC (Frank Corpuz) will provide DOE (Glenn Goldberg) with a draft request letter to the regulators.
- **DOE and Ecology have signed the backfill concurrence checklist for the 116-D-7 site (Attachment 6).**

Groundwater

- **DOE (Arlene Tortoso) provided that status of the F003 issue, which addresses whether the F003 listed waste code applies to effluents such as 100-HR-3 Pump and Treat wastes and extracted aquifer. Wayne Soper reviewed and gave approval signature to a summary document that summarized and provided rationale that supports F003 not being applicable such wastes (Attachment 7).**

**STATUS OF
CVPs TO BE APPROVED IN FY00**

Attachment 4

Site Designation	Site Type	Prepare Draft	Regulator Review	Prepare Rev. 0	Approved
BC Group 3 Sites					
116-B-4	French Drain	Complete	Complete	Complete	At EPA
116-B-6B	Crib	Complete	Complete	Complete	At EPA
116-B-9	French Drain	Complete	Complete	Complete	At EPA
116-B-2	Fuel Storage Basin Trench	Complete	Complete	Complete	At EPA
116-B-3	Crib	Complete	Complete	Complete	At EPA
116-B-10	Dry Well	Complete	Complete	Complete	At EPA
116-B-12	Crib	Complete	Complete	Complete	At EPA
116-C-2A/B/C & OB	Crib/Pump Station	Complete	At EPA		
116-B-6A/B-16	Crib/Storage Tanks	In Progress			
D/DR Group 2 Sites					
116-D-7	Retention Basin	In Progress			
100-D-18 (107D4)	Sludge Disposal Trench	In Progress			
100-D-19	Sludge Pit	Locating Site			
116-DR-1&2	Trench	Sampling			
D/DR Group 2 Pipelines					
100-D-48:1/48:1	Group 2 North Pipelines	Excavating			
1607-D2	Group 2 Pipelines	Sampling			
100-D-49:2	Group 2 East Pipelines	In Progress			
100-D-48:2	Group 2 West Pipelines	In Progress			
100-D/DR	Group 2 P/L O/B Piles	In Progress			
D/DR Group 3 Sites					
116-D-3	French Drain	WDS Site Closeout Activities			
116-D-4	French Drain	Sampling			
116-D-6	French Drain	Sampling			
116-D-1A	Storage Basin Trenches	Excavating			
116-D-1B	Storage Basin Trenches	Excavating			
116-D-8	Crib	Sampling			
116-D-2	Crib	Sampling			
116-DR-6	Liquid Disposal Trench	Sampling			
116-DR-4	Pluto Crib	Sampling			
100-D-12	NaCr2 Station	Excavating			
116-DR-3	Storage Basin Trench	Locating Site			
100-D-52	Drywell	Excavating			
116-DR-7	Inkwell Crib	Sampling			
D/DR Group 3 Pipelines					
100-D-Pipelines	Group 3 100-D Pipelines	Excavating			
100-DR-Pipelines	Group 3 100-DR Pipelines	Excavating			
D/DR Grp 3 O/B	Group 3 Pipeline Overburden				
H Group 4 Sites					
1607-H-2	Septic Tank	Sampling			
1607-H-4	Septic Tank	Sampling			
116-H-1	107-H LW Disposal Trench	Excavating			
116-H-7	Retention Basin	Excavating			
100-H-5	Sludge Disposal Trench	Excavating			
100-H-17	Overflow Area	Excavating			
100-H-21	H Reactor Pipelines	Excavating			
100-H-24	151-H Substation	Excavating			
116-H-2	110-H Trench				
100-H-2	Thimble Guide Rod Pit				
100-H-30	Sewage Pit				
116-H-3	French Drain				
F Group 4 Sites					
100-F-2	PNNL Strontium Garden				

Status Date: 2/16/00 2:09 PM

Problem:

Create lookup values for use in 2000 that will provide for protectiveness of 15 mrem/yr in 2018

isotope	Half Life (years)	Elapsed Time (years)	Inverse of decay factor	Current Look-up (pCi/g)	Look-up 2018 (pCi/g)
Am-241	432.2	18	1.03	31.1	N/A
C-14	5730	18	1.00	5.2	5.2
Co-60	5.271	18	10.66	1.4	14.8
Cs-137	30.17	18	1.51	8.2	9.4
Eu-152	13.3	18	2.55	3.5	5.4
Eu-154	8.5	18	4.34	3.0	13.0
Eu-155	4.96	18	12.37	1.25	15.46
Ni-68	100	18	1.13	4.028	4.581
Pu-238	87.74	18	1.15	37.4	43.1
Pu-239	24100	18	1.00	38.8	38.9
Pu-240	6540	18	1.00	33.8	34.0
Sr-90	28.8	18	1.54	4.5	7.0
Tc-99	2.14E+05	18	1.00	15.5	15.0
Tl-202	1.41E+10	18	1.00	1.3	1.3
H-3	12.33	18	2.75	5.16	1.403
U-233/234	2.45E+05	18	1.00	1.1	1.1
U-285	7.04E+08	18	1.00	1.0	1.0
U-235	4.47E+09	18	1.00	1.1	1.1

Note: Am241 is a daughter of Pu241, and as such will not decay over the next 75 years

DRAFT

Appendix A

Summary of 116-DR-7 Verification Soil Sampling and Analytical Results

5.0 REFERENCES

- BHI, 1999, *Instruction Guide for the Remediation of the 100-BC-1, 100-DR-1, and 100-HR-1 Waste Sites*, 0100X-IG-G0001, Rev. 1, Bechtel Hanford, Inc., Richland, Washington.
- BHI, 1999a, *Cleanup Verification Package for the 116-DR-9 Retention Basin*, CVP-99-00006, Rev 0, Bechtel Hanford, Inc., Richland, Washington
- DOE-RL, 1998a, *100 Area Remedial Action Sampling and Analysis Plan*, DOE/RL-96-22, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 1998b, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, DOE/RL-96-17, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- EPA, 1993, *Methods for Evaluating the Attainment of Cleanup Standards, Volume 1: Soils and Solid Media*, EPA 230/02-89-042, U.S. Environmental Protection Agency, Washington, D.C.
- EPA, 1999, *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units (Remaining Sites ROD)*, Hanford Site, Benton County, Washington, July 1999, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

4.0 STATEMENT OF PROTECTIVENESS

This verification package demonstrates that remedial action at the 116-DR-7 site has achieved the RAOs and corresponding RAGs established in the approved ROD (EPA 1999) and RDR/RAWP (DOE-RL 1998b). Materials that contain COCs at concentrations exceeding the RAGs have been excavated and disposed of at the ERDF. The remaining soils have been sampled and analyzed to show that residual concentrations will support future land uses that can be represented (or bounded) by a rural-residential scenario. This scenario, assumes multiple exposure pathways (e.g., ingestion, inhalation, direct exposure) for shallow zone soils. (The acceptability of unrestricted direct exposure to deep zone soils has not been demonstrated; therefore, institutional controls to prevent uncontrolled drilling or excavation into the deep zone [i.e., below 4.6 m (15 ft)] are required.) This package also demonstrates that residual COC concentrations pose no threat to groundwater or the Columbia River. The 116-DR-7 site is thus verified to be remediated in accordance with the ROD and may be backfilled.

3.3 CLEANUP VERIFICATION ANALYSIS AND RESULTS

Formal data validation was not performed for this site. However, supplementary data evaluation was performed on all sample delivery groups. To ensure adequate data quality, data quality assessment (DQA) investigators reviewed the study objectives in the SAP (DOE-RL 1998a) to determine the context for analyzing the data. The context for analyzing the data includes a comparison of analytical results to the PARCC parameters as specified in the SAP (DOE-RL 1998a). The DQA results show that the analytical data, for the 116-DR-7 site, are suitable for decision making purposes.

All results were below detectable limits or below background (uranium), except for cesium-137 (0.073 pCi/g) and europium-152 (0.218 pCi/g) in sample B0X439. The Site verification look-up values for these radionuclides to meet a 15 mrem/yr criteria are 6.2 pCi/g for cesium-137 (two orders of magnitude higher than the sample result) and 3.3 pCi/g for europium-152 (one order of magnitude higher than the sample result).

These samples were also compared to levels of cesium-137 and europium-152 at the 116-DR-9 site (BHI 1999a), which were evaluated through RESRAD to confirm that the site met the 15 mrem/yr criteria. The values used for the RESRAD model at 116-DR-9 were 2.84 pCi/g for cesium-137 and 0.405 pCi/g for europium-152 (BHI 1999a). Even though these results are significantly higher than the results for the 116-DR-7 site, they still met the 15 mrem/yr above background cleanup criteria. This demonstrates that the two values detected at 116-DR-7 also meet the cleanup criteria. Thus, no further statistical analysis or RESRAD modeling was needed for this site to demonstrate that cleanup criteria were met.

Attachment 5



3.0 CLEANUP VERIFICATION SAMPLING AND ANALYSIS

The sampling and analysis process to verify site cleanup involves many steps. This section presents a generalized description of the cleanup verification methodology.

3.1 SAMPLE DESIGN

Site cleanup verification sampling is governed by sampling designs developed in accordance with the SAP and the instruction guide (DOE-RL 1998a, BHI 1999). In general terms, the sampling designs specify collection of samples at random locations to assess the variability and levels of any residual contamination. The shallow zone and (if applicable) the deep zone are each divided into one or more decision units, and a sampling design is developed for each unit. The shallow zone is defined as soil from grade level to 4.6 m (15 ft) below the ground surface. In practice, the shallow zone is typically represented by soils from the excavation sidewalls to a depth of 4.6 m (15 ft). For this site, the entire excavation was considered to be in the shallow zone.

As illustrated in Figure 2, the sampling design divides each decision unit into sampling areas that, in turn, are divided into 16 subareas; the center of each subarea is designated as a sampling "node." A number of nodes in each sampling area are randomly selected for variance sampling, and each sample is analyzed using Gamma Energy Analysis. These results are used in the variance analysis.

Once the variance sampling, analysis, and data evaluation are completed, final cleanup verification samples are collected from each sampling area. Each verification sample is a composite formed by combining aliquots collected at randomly selected nodes within the sampling area. The final cleanup verification samples for each decision unit comprise the composite samples collected for each of that unit's sampling areas.

3.2 VARIANCE SAMPLING AND ANALYSIS

Variance analysis is performed for decision units where direct exposure is a concern. Variance analysis (as described in the SAP, Section A.6 [DOE-RL 1998a]) determines the site-specific number of final verification samples. The analysis uses the individual variance samples and is based on the minimum detectable difference approach presented in U.S. Environmental Protection Agency (EPA) guidance (EPA 1993). In this approach, contaminant variability is quantified and used to determine the number of samples required per EPA to represent the site for cleanup verification. Twenty-five non-radioactive (quick turn-around laboratory [QTL]) process samples and three variance samples were taken. From these samples, it was determined that six final verification samples were required for this site.

2.4 REMEDIAL ACTION DESCRIPTION

Remedial action at this site began on December 7, 1999 and ended on December 8, 1999. Excavation of the 116-DR-7 site involved removing the overburden materials, the contaminated structure, and underlying contaminated soil. Based on field screening, overburden materials identified as potentially clean were placed in stockpiles for potential use as backfill. Materials that were found to be contaminated were disposed of at ERDF. On December 8, 1999, the excavation reached the design limit at El. 137.4 m (451 ft). Cleanup verification sampling began and was completed on January 21, 2000.

At the completion of remedial action and removal of the engineered structure, the excavation was approximately 250.6 m² (2697 ft²) in area with a maximum depth of approximately 4.6 m (15 ft). Approximately 65 tons of material from the site were disposed of at ERDF. The excavation will be backfilled in the near future with appropriate materials to the reference grade of El. 142.0 m (465.9 ft). Clean backfill will be obtained from the nearby borrow pit 21.

2.0 SITE DESCRIPTION AND SUPPORTING INFORMATION

2.1 SITE HISTORY

The site was remediated on December 7, 1999 by removing 65 tons of material (tanks and associated soil) and disposing of it at ERDF. The site consisted of two 2,080-liter (550-gallon) potassium borate solution underground storage tanks under a concrete foundation pad. The code name "INK" was used for the solution because of its dark color. The tanks held liquid potassium borate solution drained from the liquid 3X system before the Ball 3X system upgrade.

Ground penetrating radar scans were done in 1993 and 1996 to locate the crib. A variety of locations were investigated before the 116-DR-7 site was found. An anomalous zone was detected in the vicinity of the concrete crib monument (marker). However, the anomalous zone appeared to be more characteristic of buried waste than a liquid waste crib. A second suspect site was located 12 meters (40 feet) east of the first scanned area. No anomalies were found in the second area. Finally, a document review by R.W. Carpenter indicated two INK underground storage tanks were installed beneath a concrete pad that was located between the two scanned areas. These two tanks were removed during remediation activities. The site is approximately 1100 m (3609 ft) from the 100-year flood level contour of the Columbia River (Figure 1).

2.2 SUBSURFACE CONDITIONS

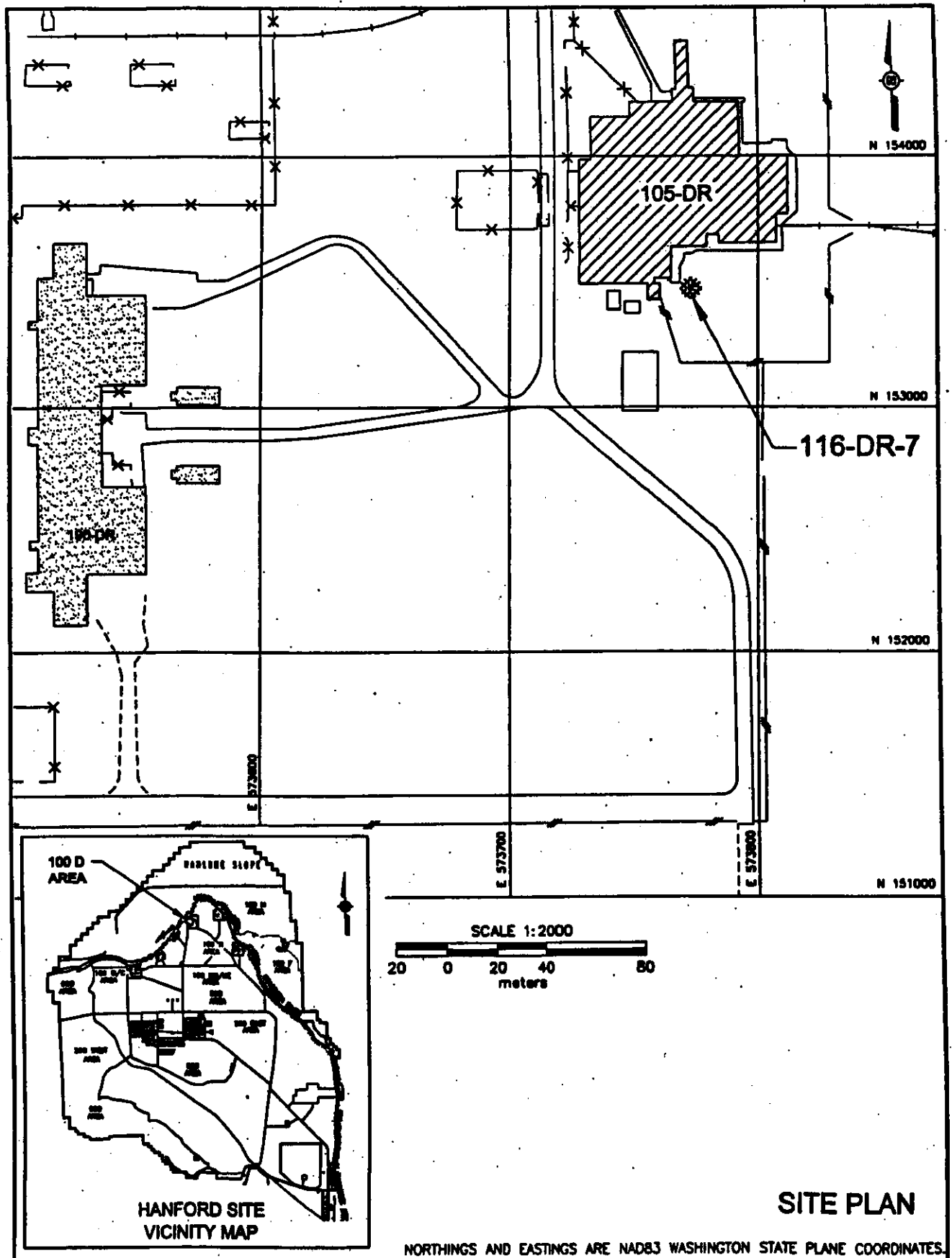
The soil column (vadose zone) underlying the waste site and extending to groundwater consists of material from the Hanford formation. The Hanford formation consists predominantly of medium dense to dense sand and gravel, with varying amounts of silt and cobbles. The long-term groundwater level beneath the site is estimated at El. 117.6 m (386 ft) for analysis purposes, based on historical and current information from adjacent groundwater wells. The depth to groundwater is estimated to be 19.8 m (65 ft) beneath the floor of the excavation, and 24.4 m (80 ft) beneath surface grade level. Groundwater elevations in adjacent wells are influenced by the nearby Columbia River and other factors such as atmospheric pressure.

2.3 CONTAMINANTS OF CONCERN

Waste site contaminants of concern (COCs) identified through process knowledge were listed in the SAP (DOE-RL 1998a). The COCs for this site include the following:

- Cobalt-60
- Cesium-137
- Europium-152
- Europium-154
- Strontium-90
- Uranium-233/234
- Uranium-238.

Figure 1. Hanford Site Map and 116-DR-7 Site Plan



1D:021000A

1.0 INTRODUCTION

1.1 PURPOSE

This closeout information package documents the attainment of the remedial action objectives (RAOs) and corresponding remedial action goals (RAGs) for the 116-DR-7 Inkwell Crib (also referred to herein as the 116-DR-7 site). RAOs are narrative statements that define the extent to which the waste sites require cleanup to protect human health and the environment. RAGs are contaminant-specific numerical cleanup criteria developed to guide the remedial actions to meet the RAOs. Site-specific data evaluations are presented to demonstrate protection from direct exposure and protection of groundwater and the Columbia River.

As shown in Figure 1, the 116-DR-7 site is located within the 100-DR-2 Operable Unit in the 100 Areas of the Hanford Site in southeastern Washington State.

1.2 REMEDIATION AUTHORITY

The site remediation was performed in accordance with the July 1999 *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units (Remaining Sites ROD [EPA 1999])*. The ROD provides the U.S. Department of Energy, Richland Operations Office (RL) the authority and guidelines to conduct this remedial action at the site. The preferred remedy specified in the ROD is excavation and disposal of contaminated materials at the Environmental Restoration Disposal Facility (ERDF). The RAOs are described in the ROD (EPA 1999) and are summarized along with the corresponding RAGs in Section 4.0. Methods to attain the RAOs are presented in the *Remedial Design Report/Remedial Action Work Plan for the 100 Area (RDR/RAWP)* (DOE-RL 1998b) and are discussed in further detail in the *100 Area Remedial Action Sampling and Analysis Plan (SAP [DOE-RL 1998a])* and in other referenced documents.

Closeout Information for the 116-DR-7 Inkwell Crib

**Prepared for the U.S. Department of Energy
by Bechtel Hanford, Inc.**

February, 2000

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ACRONYMS

COC	contaminant of concern
COPC	contaminant of potential concern
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
HEIS	Hanford Environmental Information System
MDA	minimum detectable activity
NGVD29	National Geodetic Vertical Datum 1929
QTL	Quick Turnaround Laboratory
RAG	remedial action goal
RAO	remedial action objective
RDR/RAWP	Remedial Design Report/Remedial Action Work Plan
RESRAD	RESidual RADioactivity dose Model
RL	U.S. Department of Energy, Richland Operations Office
ROD	Record of Decision
SAP	sampling and analysis plan

Waste Site Reclassification Form

Date Submitted: 02/16/00	Operable Unit(s): 100-DR-2	Control Number: 2000-04
Originator: F. M. Corpuz	Waste Site ID: 116-DR-7	Lead Agency: Ecology
Phone: 373-1661	Type of Reclassification Action: Rejected <input type="checkbox"/> Closed Out <input checked="" type="checkbox"/> No Action <input type="checkbox"/>	

This form documents agreement among the parties listed below authorizing classification of the subject unit as rejected, closed out, or no action and authorizing backfill of the site, if appropriate. Final removal from the NPL of no action or closed-out sites will occur at a future date.

Description of current waste site condition:

Remedial action at this site has been performed in accordance with remedial action objectives and goals established by the U.S. Environmental Protection Agency and the Washington State Department of Ecology, in concurrence with the U.S. Department of Energy, Richland Operations Office. The selected remedial action involved (1) excavating the site to remove the tanks and provide access to subsurface soils for sampling, (2) disposing of the tanks and contaminated soil at the Environmental Restoration Disposal Facility at the 200 Area of the Hanford Site, and (3) sampling the excavation per the 100 Area Remedial Action Sampling and Analysis Plan (SAP [DOE-RL 1998a]) and ensuring the analytical results are below limits already documented to meet the specified soil clean up levels, and (4) backfilling the site with clean soil to adjacent grade elevations. The excavation and disposal activities have been completed. The site is currently an open excavation with sloping walls. The exposed surfaces have all been sampled and analyzed. The site will be backfilled in the near future.

Basis for reclassification:

The 116-DR-7 Inkwell Crib has been documented through sampling and analysis to have levels of the contaminants of concern that are either below detection levels or lower than those required to meet the cleanup standards specified in the *Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-1, 100-FR-2, 100-HR-1, 100-HR-2, 100-KR-1, 100-KR-2, 100-IU-2, 100-IU-6, and 200-CW-3 Operable Units (Remaining Sites ROD [EPA 1999])*, and the *Remedial Design Report/Remedial Action Work Plan for the 100 Area (DOE-RL 1998b)*. The remedial actions taken, including verification sample numbers, are described in the Waste Information Data System (WIDS) Summary Report for the 116-DR-7 Inkwell Crib. The complete sampling results are accessible through the Hanford Environmental Information System (HEIS). The sampling results and additional information on the remedial actions are also presented in the attachment to this reclassification form.

Client Representative	Signature	Date
DOE Project Manager	Signature	Date
Ecology Project Manager	Signature	Date
EPA Project Manager	Signature	Date

Table A-1. 116-DR-7 Shallow Zone Sample Data (sample date: 1/21/00.).

Decision Unit	Composite Area	HEIS Number	U-233/234 (pCi/g)		U-238 (pCi/g)		Sr-90 (pCi/g)		Cs-137 (pCi/g)		Co-60 (pCi/g)		Eu-152 (pCi/g)		Eu-154 (pCi/g)	
			Result	MDA	Result	MDA	Result	MDA	Result	MDA	Result	MDA	Result	MDA	Result	MDA
Unit 1	A1	B0X435	0.604 J	0.062	0.514 J	0.062	-0.01 U	0.19	0.028 U	0.028	0.028 U	0.028	0.068 U	0.068	0.088 U	0.088
	A2	B0X438	0.402 J	0.056	0.387 J	0.056	-0.007 U	0.17	0.029 U	0.029	0.03 U	0.03	0.068 U	0.068	0.096 U	0.096
	A3	B0X439	0.392 J	0.062	0.392 J	0.062	0.089 U	0.18	0.073 J	0.05	0.055 U	0.055	0.218	0.11	0.16 U	0.16
	A4	B0X440	0.386 J	0.095	0.274 J	0.095	-0.065 U	0.17	0.072 U	0.072	0.07 U	0.07	0.13 U	0.13	0.21 U	0.21
QA/QC Samples	Duplicate of B0X435	B0X436	0.699 J	0.12	0.449 J	0.095	-0.013 U	0.16	0.044 U	0.044	0.047 U	0.047	0.1 U	0.1	0.15 U	0.15
	Split of B0X435	B0W7X6	0.66 J	0.0339	0.547 J	0.0293	0.141 U	0.151	0.00204 U	0.0192	0.0000476 U	0.0187	-0.00751 U	0.0434	-0.0246 U	0.0546
	Equipment Blank of B0X435	B0X437	0.371 J	0.079	0.363 J	0.063	-0.106 U	0.2	0.031 U	0.031	0.036 U	0.036	0.07 U	0.07	0.11 U	0.11

U = Analyte is below the detection limits of the methods and instruments used (undetected).

J = The associated value is an estimated quantity.

NA = Data not available

Negative radionuclide results = Radioactive results are measured as decay counts (e.g. counts per minute). An average background subtraction is applied, which may be more than the specific sample count; therefore, a negative result is possible.

Note: In some cases the laboratory reports no value but provides an MDA. In these cases, the MDA has been used as the sample result.

Waste Site: 116-D-7	BACKFILL CONCURRENCE CHECKLIST (Concurrence to Proceed with Waste Site Backfill Operations)		WIDS No.: 116-D-7	
This checklist is a summary of cleanup verification results for this site. The checklist is intended as an agreement allowing the ERC subcontractor to backfill this site prior to the issuance of the final cleanup verification package. The lead regulatory agency has been provided copies of detailed calculations. The results are summarized below.				
Regulatory Requirement	Remedial Action Goals (RAG)	Results	RAG Attained	Ref.
Direct Exposure – Radionuclides	1. Attain 15 mrem/yr dose rate above background over 1000 years.	1. Maximum dose calculated by RESRAD is 3.57 mrem/yr (not accounting for clean backfill).	Yes	A
Direct Exposure – Nonradionuclides	1. Attain individual COC RAGs.	1. All individual COC concentrations are below the RAGs.	Yes	B
Meet Nonradionuclide Risk Requirements	1. Hazard quotient ratio of <1 for noncarcinogens.	1. All hazard quotient ratios are below 1.	Yes	B
	2. Cumulative hazard quotient ratio of <1 for noncarcinogens.	2. Cumulative hazard quotient ratio is 1.4×10^{-2} .		B
	3. Excess cancer risk of $<1 \times 10^{-6}$ for individual carcinogens.	3. Excess cancer risk for individual carcinogens are all less than 1×10^{-6} .		B
	4. Attain a cumulative excess cancer risk of $<1 \times 10^{-5}$ for carcinogens.	4. Cumulative excess cancer risk is 3.2×10^{-9} .		B
Groundwater/River Protection – Radionuclides	1. Attain single COC groundwater & river RAGs.	1. All single COC Groundwater and river RAGs have been attained.	Yes	C
	2. Attain National Primary Drinking Water Regulations 4-mrem/yr (beta/gamma) dose standard to target receptor/organ.	2. All organ specific doses are below the 4-mrem/yr dose standard.		C
	3. Meet National Primary Drinking Water Regulations 15 pCi/L (alpha activity) standard.	3. The alpha activity is 0 pCi/L for all years.		C
Groundwater/River Protection – Nonradionuclides	1. Attain individual nonradionuclide groundwater & river RAGs.	1. All the groundwater and river RAGs have been attained.	Yes	A,B,D
Other Supporting Information	1. Sample variance calculation.			E, F
	2. Sample location design.			G
All citations above and references on attached sheet are on record with Bechtel Hanford, Inc., Document and Information Services. Above noted regulatory requirements have been attained.				
<div style="display: flex; justify-content: space-between;"> <div> <i>[Signature]</i> BHI Task Manager Date 2/4/00 </div> <div> <i>[Signature]</i> BHI Project Engineer Date 2/4/00 </div> <div> <i>[Signature]</i> DOE Project Manager Date 2/9/00 </div> </div>				
Given the attached information, DOE can proceed with backfill of the site with minimal risk. Final approval that the site has met RAOs and RAGs will occur with the submittal, review, and approval of the Cleanup Verification Package by the lead regulatory agency.				
<div style="display: flex; justify-content: space-between;"> <div> N/A EPA Project Manager Date </div> <div> <i>[Signature]</i> Ecology Project Manager Date 2-4-00 </div> </div>				

Backfill Concurrence Checklist Attachments/References

Attachment 6

Attachments/ References	Description
A	116-D-7 Cleanup Verification RESRAD Calculations, 0100D-CA-N0020, Rev. 0
B	116-D-7 95% UCL Calculations for Compliance with Cleanup Standards, 0100D-CA-V0049, Rev. 0
C	116-D-7 Comparison to Drinking Water Standards, 0100D-CA-V0043, Rev. 0
D	Estimation of Distribution Coefficients and Leachability of Hexavalent Chromium in 100-D Area Hanford Formation Sediments, R. J. Serne and K. E. Parker, Pacific Northwest National Laboratory, Richland, WA, October 28, 1999
E	Required Number of Samples for the 116-D-7 Retention Basin Shallow Zone (Sample Variance Calculations), 0100D-CA-V0045, Rev. 0
F	100-D Hexavalent Chromium Leach Rate Analysis, 0100D-CA-V0089, Rev. 0
G	116-D-7 Deep Zone Cleanup Verification Model, 0100D-CA-V0040, Rev. 0
H	116-D-7 Retention Basin Verification Sampling (Shallow and Deep Zone Sampling Locations), 0100D-CA-V0034, Rev. 1

Listed Waste – F003 (Methanol)

Background

- A small amount of resin and groundwater contained in a resin pump used at the N Springs Pump and Treat system were inadvertently discharged to the 100-HR-3 Treatment System.
- The resins from the N Springs Pump and Treat System are currently being designated as state-only F003 listed waste because of an assumption that listed waste was discharged to the 1325-N and 1301-N Liquid Waste Disposal Facilities and subsequently to the groundwater.
- The Form 3s of the Dangerous Waste Permit Applications for the 1325-N and 1301-N Liquid Waste Disposal Facilities (LWDFs) includes the F003 listed waste code based upon assumed discharges of spent methanol.

Issue

- Does the F003 listed waste code now apply to the 100-HR-3 Pump and Treat wastes (resins, PPE, etc), re-injected fluids, aquifer (if it is extracted), etc.

Recommendation

- The F003 code should not be applied to the 100-HR-3 Pump and Treat project because the groundwater and resins do not contain spent methanol.

Rationale


- Based on information contained in the Part A Form 3s, the discharge concentration of methanol is estimated to be 0.47 ppm.
 - Maximum methanol discharge of 6,200 lbs/yr
 - Stream flow rate of 4,320,000 gal/day
 - $(4,320,000 \text{ gal/day}) \times (8.34 \text{ lbs/gal}) \times (365 \text{ day/yr}) = 1.315 \times 10^{10} \text{ lbs/yr}$
 - $(6,200 \text{ lbs/yr}) \div (1.315 \times 10^{10} \text{ lbs/yr}) = 4.71 \times 10^{-7} \text{ lbs methanol/lb water} = 0.47 \text{ ppm}$
- This concentration would be further reduced during infiltration into the ground. Assuming a 100 to 1 dilution (as used in the soil remediation projects), the concentration would be below 0.0047 ppm. This concentration would be even further reduced once the material was introduced into the 100-HR-3 pump and treat system.
- Two samples were obtained and analyzed for methanol from the N Springs P&T Project, one from a drum containing well drilling slurries and one of the influent sample port. Methanol was not detected (5 ppm undetected). A groundwater sample was also taken from well 199-N-3. Methanol was not detected in this sample (0.93 ppm undetected).

077792

Note

- N Springs waste is designated as state-only F003. It is not considered a listed waste under the federal regulations. Under the federal regulations, the F003 designation is applied solely on the characteristic of ignitability. Under 40 CFR 261.3(a)(2)(iii) a waste listed solely due to a hazardous waste characteristic is no longer a listed waste if mixed with another waste such that the resultant mixture no longer exhibits the characteristic. The methanol, upon mixing with water after discharge would no longer be ignitable and hence does not carry the federal F003 code.

Approval

 1-28-00
W. W. Soper, Cleanup Project Manager
Washington State Department of Ecology

Distribution**Unit Mangers' Meeting: 100 Area Remedial Action Unit/Source Operable Units**

Glenn Goldberg	DOE-RL, RP (H0-12)
Owen Robertson.....	DOE-RL, RP (H0-12)
Chris Smith.....	DOE-RL, RP (H0-12)
 Lisa Treichel	 DOE-HQ (EM-442)
 Wayne Soper.....	 WDOE (Kennewick) (B5-18)
Rick Bond.....	WDOE (Kennewick) (B5-18)
 Lynn Albin.....	 Washington Dept. of Health
Richard Jauish.....	Washington Dept. of Health
 John April.....	 BHI (H0-17)
Dave Blumenkranz	CHI (H9-02)
Ella Coenenburg.....	BHI (H9-03)
Frank Corpuz.....	BHI (X9-06)
Rick Donahoe.....	BHI (H0-17)
Jon Fancher.....	CHI (H9-02)
Dennis Falk.....	(B5-01)
Alvina Goforth.....	BHI (H0-09)
Chris Kemp.....	BHI (S3-20)
Tom Kisenwether.....	BHI (X9-10)
Alvin Langstaff.....	BHI (X3-40)
Tamen Rodriguez.....	BHI (H0-17)
Fred Roeck.....	BHI (H0-17)
Mark Sturges	CHI (X3-40)
Joan Woolard	BHI (H0-02)

Please inform Tamen Rodriguez (372-9562) – BHI (H0-17)
Of deletions or additions to the distribution list.